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EXAMINER

POE, MICHAEL I

ART UNIT PAPER NUMBER

1732

DATE MAILED: 04/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/767,624

Applicant(s)

MILLER ET AL.

Examiner

Michael I. Poe

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20040426
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

2. Claims 2, 5-8 and 14 are objected to because of the following informalities: (1) "is" should be inserted before "selected" on line 2 of claim 2; (2) "increase" should be "increased" on line 2 of claim 6; (3) "is" should be inserted before "selected" on line 10 of claim 5; and (4) "is" should be inserted before "adjusted" on line 2 of claim 14. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 includes the recitation "said second selected value is at least 50:1". This recitation is generally confusing because it is unclear what upper limit for the aspect ratio is defined by the claim 12. Claim 9 states that, when the monitoring indicates the aspect ratio of the crystals is greater than a second selected value, the amount of alum being used to form the slurry is reduced. As such, the second selected value is an upper limit for the aspect ratio that should not be exceeded during the process. Claim 12, as currently written, allows this upper limit to be anything greater than 50:1, and therefore claim does not establish a clear, defined upper limit as required by claim 9. For the purpose of this Office action, the examiner has assumed that the second selected value is not greater than 50:1 as set forth in claim 13 and the applicant's original disclosure instead of at least 50:1 as currently claimed in claim 12.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,320,677 (Baig).

Claim 1

Baig teaches a method of producing a composite material (in an improved process for producing a composite product) including mixing wood fibers, gypsum and water to form a dilute slurry (mixing water, gypsum and a cellulosic fiber to form a dilute slurry); processing the slurry in a pressure vessel at a temperature sufficient to convert the gypsum to calcium sulfate alpha hemihydrate while continuously agitating the slurry with gentle stirring or mixing to break up any fiber clumps and keep all of the fibers in suspension (heating the slurry, under pressure, to form acicular calcium sulfate alpha hemihydrate crystals); removing the calcined slurry from the pressure vessel; substantially dewatering the slurry to form a filter cake (substantially dewatering the hot slurry); pressing, molding or otherwise shaping the dewatered filter cake (shaping the dewatered slurry to form a composite product before rehydrating the hemihydrate back to gypsum); rehydrating the filter cake by allowing the filter cake to cool; and drying the filter cake to remove the remaining water from the rehydrated filter cake (abstract; column 4, lines 26-59). Baig further teaches that crystal modifiers, such as for example organic acids, can be added to the slurry while being agitated in the pressure vessel to stimulate or retard crystallization or to lower the calcining temperature (adding a crystal modifier to said dilute slurry and heating said slurry at a reduced temperature and/or for a reduced time to form acicular calcium sulfate alpha hemihydrate crystals) (column 6, lines 41-58).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,320,677 (Baig) in view of U.S. Patent No. 3,835,219 (Jaunaraajs et al.).

Claims 2, 5 and 6

The discussion of Baig as applied to claim 1 above applies herein.

Note that claim 5 is essentially the same as the combination of claims 1 and 2; therefore, claim 5 is rejected herein for substantially the reasons set forth with regard to claims 1 and 2 hereafter.

Although Baig teaches the addition of a crystal modifier to lower the calcining temperature as claimed, Baig does not specifically teach the crystal modifiers set forth in claim 2. However, Jaunaraajs et al. teach a method for the preparation of fibrous soluble calcium sulfate anhydrite including forming an aqueous suspension of gypsum including a small amount of a crystal habit modifier which is suitable for the formation of fibrous soluble anhydrite and converting the suspension to fibrous soluble hemihydrate by reaction in a pressure vessel in the presence of saturated steam at a temperature in the range from 140°C to 200°C for a period of up to 3.0 hours to form fibers having aspect ratios in the range of from 10:1 to 100:1 (the aspect ratio of said hemihydrate crystals is increased to at least 5:1) wherein the crystal habit modifier is acids and salts thereof and other salts such as sodium chloride, sodium sulfate, aluminum sulfate and zinc sulfate (said crystal modifier is selected from the group of aluminum chloride, ... , zinc sulfate, ... and trisodium phosphate) (column 2, lines 24-59). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use zinc sulfate as the crystal modifier in the process of Baig as taught by Jaunaraajs et al. to provide more accurate and more extensive control of the crystal formation (e.g., the aspect ratio) in the process of Baig. With regard to the crystal modifier causing an increase in the aspect ratio of the crystals in the process of Baig in view of Jaunaraajs et al. as set forth in claim 5, the examiner

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stipulates that one of ordinary skill in the art would have obviously recognized that aspect ratio of the crystals was increased by the addition of the crystal habit modifier because the process of Baig in view of Jaunaraajs et al. would be capable of producing aspect ratios within the claimed range as set forth above (see column 2, lines 38-42 of Jaunaraajs et al.).

Claims 3, 4, 7 and 8

The discussion of Baig and Jaunaraajs et al. as applied to claims 2, 5 and 6 above applies herein.

Although Baig teaches the addition of a crystal modifier to lower the calcining temperature as claimed, Baig does not specifically teach that the amount of crystal modifier is from about 0.05% to about 5%, or more particularly about 0.1% to about 1% by weight based on the weight of gypsum. However, Jaunaraajs et al. further teach that the crystal habit modifier is present in an amount of from 0.1 to 5 weight percent, preferably 0.25 to 1.5 percent (the amount of crystal modifier is from about 0.05% to about 5% by weight, based on the weight of gypsum; the amount of crystal modifier is from about 0.1% to about 1% by weight, based on the weight of gypsum) (column 3, lines 17-19). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use zinc sulfate, in the claimed amounts, as the crystal modifier in the process of Baig as taught by Jaunaraajs et al. to provide more accurate and more extensive control of the crystal formation (e.g., the aspect ratio) in the process of Baig.

Claims 9-14

Baig teaches a method of producing a composite material (in an improved process for producing a composite product) including mixing wood fibers, gypsum and water to form a dilute slurry (mixing water, gypsum and a cellulosic fiber to form a dilute slurry); processing the slurry in a pressure vessel at a temperature sufficient to convert the gypsum to calcium sulfate alpha hemihydrate while continuously agitating the slurry with gentle stirring or mixing to break up any fiber clumps and keep all of the fibers in suspension (heating the slurry, under pressure, to form acicular calcium sulfate alpha hemihydrate crystals); removing the calcined slurry from the pressure vessel; substantially dewatering the slurry to form a filter cake (substantially dewatering the hot slurry); pressing, molding or otherwise shaping the dewatered filter cake (shaping the dewatered slurry to form a composite product before rehydrating the hemihydrate back to gypsum); rehydrating the filter cake by allowing the filter cake to cool; and drying the

filter cake to remove the remaining water from the rehydrated filter cake (abstract; column 4, lines 26-59). Baig further teaches that crystal modifiers, such as for example organic acids, can be added to the slurry while being agitated in the pressure vessel to stimulate or retard crystallization or to lower the calcining temperature (column 6, lines 41-58).

Although Baig teaches the addition of a crystal modifier, Baig does not specifically teach the crystal modifier is alum. Baig further does not teach that the aspect ratio is maintained between 5:1 and 50:1 as set forth in claims 10-12. However, Jaunarajs et al. teach a method for the preparation of fibrous soluble calcium sulfate anhydrite including forming an aqueous suspension of gypsum including a small amount of a crystal habit modifier which is suitable for the formation of fibrous soluble anhydrite and converting the suspension to fibrous soluble hemihydrate by reaction in a pressure vessel in the presence of saturated steam at a temperature in the range from 140°C to 200°C for a period of up to 3.0 hours to form fibers having aspect ratios in the range of from 10:1 to 100:1 (said first selected value is at least 5:1; said first selected value is at least 10:1; said second selected value is not greater than 50:1; the amount of alum being sufficient to maintain the aspect ratio of said crystals to at least about 5:1 and no greater than about 50:1; the amount of alum adjusted to maintain the aspect ratio of said crystals to at least about 10:1 and no greater than about 50:1) wherein the crystal habit modifier is acids and salts thereof and other salts such as sodium chloride, sodium sulfate, aluminum sulfate (alum) and zinc sulfate (column 2, lines 24-59). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use alum as the crystal modifier in the process of Baig to provide a product having an aspect ratio in the claimed range as taught by Jaunarajs et al. to provide more accurate and more extensive control of the crystal formation (e.g., the aspect ratio) in the process of Baig.

With regard to the step of "monitoring the aspect ratio" set forth in claims 9 and 13, the examiner stipulates that one of ordinary skill in the art when viewing the teachings of Baig and Jaunarajs et al. as a whole would have obviously recognized that the aspect ratio must intrinsically be monitored in some type of fashion in the process of Baig in view of Jaunarajs et al., even if not specifically stated, to assure that the aspect ratio is maintained in the desired and claimed range (e.g., 10:1 to 50:1). Note that the broadest reasonable interpretation of the term "monitoring" in claims 9 and 13 does not require any

measurements to be taken and further does not require any real-time monitoring (e.g., monitoring during the process). As such, the process of Baig in view of Jaunaraes et al. would teach the broadly claimed monitoring step of claims 9 and 13.

With regard to the steps of "increasing the amount of alum" and "decreasing the amount of alum" set forth in claim 9, the examiner stipulates that these steps are optional because they are only required *when* the monitoring indicates that the aspect ratio is out of the claimed range. If the aspect ratio was constantly maintained within the claimed range, as would obviously be desired in the process of Baig in view of Jaunaraes et al. to minimize the amount of waste product, the claimed steps of "increasing the amount of alum" and "decreasing the amount of alum" would not be required, and therefore would be optional. As such, the process of Baig in view of Jaunaraes et al. is not required to teach the optional steps of adjusting the amount of the crystal modifier (i.e., alum) as set forth in claim 9. However, even if the steps of adjusting the amount of the crystal modifier are not optional, the steps would have been obvious as further discussed with regard to claim 13 below.

With regard to the step of "adjusting the amount of alum used to form said slurry" set forth in claim 13, the examiner stipulates that one of ordinary skill in the art, when viewing the teachings of Baig and Jaunaraes et al. as a whole, would have obviously recognized that the amount of crystal modifier (i.e., alum) in the process of Baig in view of Jaunaraes et al. must intrinsically be adjusted in some fashion during the process of Baig in view of Jaunaraes et al., even if not specifically stated, to maintain the aspect ratio within the desired and claimed range (e.g., 10:1 to 50:1). If the amount of crystal modifier was not accurately set and not increased and/or decreased as needed during the process of Baig in view of Jaunaraes et al., the product formed would not have the desired characteristics and a great amount of undesired, waste product would be generated. Note that claim 13, as currently written, does not require the steps of "monitoring the aspect ratio" and "adjusting the amount of alum" to be interrelated (e.g., adjusting in response to the monitoring).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 1,962,887 (Ashley et al.), U.S. Patent No. 2,018,955 (Heckert et al.), U.S. Patent No. 2,856,304 (Kirk), U.S. Patent No. 3,915,927 (Jaunarajs et al.), U.S. Patent No. 3,977,890 (Jaunarajs et al.), U.S. Patent No. 4,029,512 (Jaunarajs et al.), U.S. Patent No. 4,091,080 (Kosugi et al.), U.S. Patent No. 4,140,748 (Ore), U.S. Patent No. 4,183,908 (Rolfe), U.S. Patent No. 5,312,609 (College) and Japanese Patent Publication No. 54-041952 A (Shioda et al.) have been cited of interest to show the general state of the art at the time of the applicant's invention. U.S. Patent No. 6,197,235 B1 (Miller et al.), U.S. Patent No. 6,416,695 B1 (Miller) and U.S. Patent No. 6,699,364 B2 (Song et al.) have been cited of interest to show patents by the inventor(s) of the instant application directed to similar subject matter.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael I. Poe whose telephone number is (571) 272-1207. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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